

Vitamin B12 cryst Food Grade**5016420**

Version 1.1

Revision Date 06/05/2024

Date of last issue: 01/13/2021

SECTION 1. IDENTIFICATION

Product name : Vitamin B12 cryst Food Grade

Substance name : cyanocobalamin

Manufacturer or supplier's details

Company name of supplier : DSM Nutritional Products LLC

Address : 250 Plainsboro Rd
Plainsboro NJ 08536

Telephone : (609) 452-1000

Emergency telephone number : 1-800-424-9300 (24 HR CHEMTREC, CA & US); Outside CA
& US +1-703-572-3887 (COLLECT CALLS ACCEPTED)

E-mail address of person responsible for the SDS : sds.nutritionalproducts@dsm.com

Recommended use of the chemical and restrictions on useRecommended use : For the fortification of foods
Ingredient/additive for dietary supplements
Ingredient for personal care products**SECTION 2. HAZARDS IDENTIFICATION****GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)**

Combustible dust

GHS label elements

Signal word : Warning

Hazard statements : May form combustible dust concentrations in air.

Other hazards

Risk of dust explosion.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : 5,6-dimethylbenzimidazolcyanocobalamide

Molecular formula : C63-H88-Co-N14-O14-P

Brief description of the product : Substance

Substance name : cyanocobalamin

CAS-No. : 68-19-9

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
cyanocobalamin	68-19-9	>= 90 - <= 100

Vitamin B12 cryst Food Grade**5016420**

Version 1.1

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Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

- General advice : No hazards which require special first aid measures.
- If inhaled : Move to fresh air.
If symptoms persist, call a physician.
- In case of skin contact : Take off contaminated clothing and shoes immediately.
Wash off with soap and plenty of water.
- In case of eye contact : Flush eyes with water as a precaution.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
- If swallowed : Rinse mouth with water.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
- Most important symptoms and effects, both acute and delayed : No specific symptoms known.
- Notes to physician : Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Water
Foam
- Specific hazards during fire-fighting : None known.
- Further information : Consider dust explosion hazard.
- Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Avoid dust formation.
- Environmental precautions : Try to prevent the material from entering drains or water courses.
- Methods and materials for containment and cleaning up : Sweep up and shovel.

SECTION 7. HANDLING AND STORAGE

Vitamin B12 cryst Food Grade**5016420**

Version 1.1

Revision Date 06/05/2024

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- Advice on protection against fire and explosion : Avoid dust formation.
Provide appropriate exhaust ventilation at places where dust is formed.
Take precautionary measures against static discharges.
- Advice on safe handling : For personal protection see section 8.
- Conditions for safe storage : To maintain product quality, do not store in heat or direct sunlight.

Keep container tightly closed and dry.
- Materials to avoid : No special restrictions on storage with other products.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
cyanocobalamin	68-19-9	TWA	0.3 mg/m ³	DSM Internal Limit

Personal protective equipment

- Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.
- Hand protection
Remarks : Glove material: for example nitrile rubber
- Eye protection : Safety glasses
- Skin and body protection : Lightweight protective clothing
- Hygiene measures : General industrial hygiene practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**Information on basic physical and chemical properties**

- Appearance : Crystalline powder
- Colour : red - dark red
- Odour : odourless
- Odour Threshold : No information available.
- pH : 6.0 (1 g/l, 20 °C)
- Melting point/range : > 300 °C
with decomposition
- Boiling point/boiling range : not determined
- Flash point : Not applicable
- Flammability (solid, gas) : May form combustible dust concentrations in air.
- Vapour pressure : < 0.00001 hPa (calculated (citation from literature))
- Relative vapour density : Not applicable

Vitamin B12 cryst Food Grade**5016420**

Version 1.1

Revision Date 06/05/2024

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Density	: not determined
Water solubility	: ca. 12.5 g/l
Solubility in other solvents	: Ethanol: slightly soluble Acetone: insoluble Chloroform: insoluble Ether: insoluble
Partition coefficient: n-octanol/water	: log Pow ca. -2.6
Auto-ignition temperature	: No data available
Thermal decomposition	: Not relevant
Explosive properties	: Not explosive
Oxidizing properties	: No data available

Other information

Combustibility index for deposited dust	: 3 (23 °C, VDI 2263-1) : 3 (100 °C, VDI 2263-1)
Dust explosion class	: St1 (Milled sample, Median value of the tested sample 0.042 mm, Loss on drying 4.1 %; The value was determined in the modified Hartmann tube.)
Minimum ignition energy	: 30 - 100 mJ (Milled sample, Median value of the tested sample 0.042 mm, Loss on drying 4.1 %, EN 13821) The Minimum ignition energy (MIE) of a dust/air mix depends on the particle size the water content and the temperature of the dust. The finer and the dryer the dust the lower the MIE. : General remark: The indicated dust explosion characteristics are only valid for this product and are sensitive to the sample's parameters.
Powder volume resistivity	: 1E+14 Ohmm (Product sample, Median value of the tested sample 0.116 mm, Loss on drying 3.7 %) The material can accumulate static charge and can therefore cause electrical ignition.
Minimum ignition temperature of a dust/air mix	: 440 °C (Median value of the tested sample 0.116 mm) determined in the BAM oven
Molecular weight	: 1,355.4 g/mol
Further information	: hygroscopic

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No hazards to be specially mentioned.
Chemical stability	: Stable under recommended storage conditions.
Possibility of hazardous reactions	: Dust may form explosive mixture in air.
Conditions to avoid	: Heat

Vitamin B12 cryst Food Grade**5016420**

Version 1.1

Revision Date 06/05/2024

Date of last issue: 01/13/2021

Incompatible materials : Strong acids and strong bases
Strong oxidizing agents

Hazardous decomposition products : Carbon oxides
Nitrogen oxides (NOx)
Phosphorus compounds

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity : LD50 (Mouse): > 5,000 mg/kg

Skin irritation : Prolonged skin contact may cause skin irritation.

Eye irritation : No eye irritation (Rabbit)
: Dust contact with the eyes can lead to mechanical irritation.

Sensitisation : Does not cause skin sensitisation. (Guinea pig)

Genotoxicity in vitro : negative (Ames test)

Carcinogenicity : No indication for carcinogenicity known.

IARC : No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA : No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP : No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Teratogenicity : not teratogenic

STOT - single exposure (Acute exposure) : The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure : This information is not available.

Aspiration toxicity : No aspiration toxicity classification

Experience with human exposure**Product:**

Vitamin B12 cryst Food Grade**5016420**

Version 1.1

Revision Date 06/05/2024

Date of last issue: 01/13/2021

Skin contact : Remarks: May cause sensitisation by skin contact.
(Cases have been reported rarely.)

Components:**cyanocobalamin:**

General Information : RDA (Recommended Daily Allowance) 0.001 mg

Further information**Product:**

Remarks : May cause skin discolorations.

SECTION 12. ECOLOGICAL INFORMATION**Toxicity**

Toxicity to daphnia and other aquatic invertebrates : Daphnia magna (Water flea)
EC50 (48 h) > 100 mg/l

Persistence and degradability

Biodegradability : Not readily biodegradable.
<= 5 %

Bioaccumulative potential

Bioaccumulation : Species: Chasmichthys gulosus / marine fish
Exposure time: 7 d
Temperature: 15 °C
Bioconcentration factor (BCF): 3
Elimination: Depuration DT50: ca. 40 days
Does not bioaccumulate.

Partition coefficient: n-octanol/water : log Pow ca. -2.6

Mobility in soil

Distribution among environmental compartments : No data available

Other adverse effects**Product:**

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : There is no data available for this product.

Vitamin B12 cryst Food Grade**5016420**

Version 1.1

Revision Date 06/05/2024

Date of last issue: 01/13/2021

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

- Waste from residues : Offer surplus and non-recyclable solutions to a licensed disposal company.
- User must determine if any wastes generated exhibit hazardous characteristics as per 40 CFR Part 261 or other national / local legislation.
- Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14. TRANSPORT INFORMATION**International Regulations****UNRTDG**

Not regulated as a dangerous good

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations**49 CFR**

Not regulated as a dangerous good

Special precautions for user

- Remarks : Not classified as dangerous in the meaning of transport regulations.

SECTION 15. REGULATORY INFORMATION**CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

- SARA 311/312 Hazards** : Combustible dust

- SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Vitamin B12 cryst Food Grade**5016420**

Version 1.1

Revision Date 06/05/2024

Date of last issue: 01/13/2021

Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

US State Regulations**Massachusetts Right To Know**

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know

cyanocobalamin

68-19-9

Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

Product does not contain any listed chemicals

Washington Chemicals of High Concern

Product does not contain any listed chemicals

The components of this product are reported in the following inventories:

TCSI	: On the inventory, or in compliance with the inventory
TSCA	: All substances listed as active on the TSCA inventory
AIIC	: On the inventory, or in compliance with the inventory
DSL	: All components of this product are on the Canadian DSL
ENCS	: Not in compliance with the inventory
ISHL	: Not in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
NZIoC	: On the inventory, or in compliance with the inventory
TECI	: Not in compliance with the inventory

Vitamin B12 cryst Food Grade**5016420**

Version 1.1

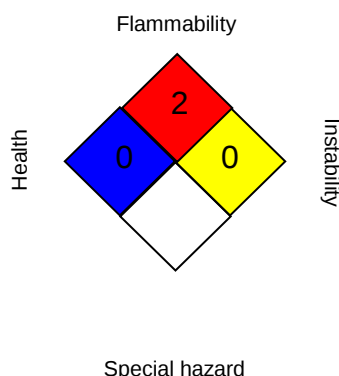
Revision Date 06/05/2024

Date of last issue: 01/13/2021

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION**Further information****NFPA 704:****HMIS® IV:**

HEALTH	/	0
FLAMMABILITY		2
PHYSICAL HAZARD		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund

Vitamin B12 cryst Food Grade**5016420**

Version 1.1

Revision Date 06/05/2024

Date of last issue: 01/13/2021

Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative
ACGIH = American Conference of Governmental Industrial Hygienists. CFR = Code of Federal Regulations. EPA = Environmental Protection Agency. NIOSH = National Institute of Occupational Safety and Health. OSHA = Occupational Safety and Health Administration. STEL = Short term exposure limit. TLV = Threshold Limit Value. TLV-C = Ceiling Limit Value. TWA = Time Weighted Average.

Revision Date : 06/05/2024

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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